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ABSTRACT

When design teachers ask questions about design decisions, and about the works that result from those decisions, they are seeking an explanation and an evaluation of the process that led to the creation of the work. Additionally, they may seek an explication and evaluation of the work itself, apart from development and process issues. These kinds of questions are called "design questions," and students expect that answers to the questions exist. This paper proposes that this response is not unreasonable, yet it is inappropriate, and even counter-productive to the goal of learning how to design. The paper considers the different perceptions about design and design education of students and teachers, noting that the shift from high school to a college design program is a difficult one. It contends that making a successful transition to college can only occur if students are willing to embrace a transformation in their perception of what designing and design education are all about. First is the problem of "correct" and "incorrect" as the only possible, or most desirable, answers to questions that clearly do not have correct or incorrect answers. Second is the problematic notion that there is a "correct" answer to all questions. The paper concludes that most of the interesting issues in designing human environments are qualitative, defying meaningful quantitative analysis, and they change unexpectedly, demanding that students learn to search for solutions, not merely provide them. (BT)

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"The Problem of the Correct Answer"

by

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"The Problem of the Correct Answer"

"If you do not know the correct answer, guess."
(from instructions given prior to standardized school tests)

I. The Character of Designing and Design Education

Design schools propose to teach students how to design. In part this proposition is carried out by asking students questions; many different kinds of questions, in many different forms and formats, and in different media.(1) Some of the questions put to students have to do with issues and ideas about designing. What is the 'answer' to a design question? This is a question that almost all design students ask. What is the 'correct answer' to a design question? This is a question that the high achievement oriented design students ask. How do you find out what the correct answer to a design question is if you do not know? Do design questions even have 'answers'?

Many of the problems we encounter in designing are what Horst Rittel has called 'wicked problems', or 'ill defined problems'. These are problems that are ill behaved, do not have a definitive formulation, or a finite set of solutions. (Lang, p. 23, 43)

When we ask questions about design decisions, and about the works that result from those decisions, we are seeking an explanation and an evaluation of the process that led to the creation of the work. We may additionally seek an explication and evaluation of the work itself, apart from development and process issues. We call these kinds of questions 'design questions'. When we ask students such design questions, they expect that answers exist to the questions we ask. I propose that this response is not unreasonable, yet it is inappropriate, and even counter productive to the goal of learning how to design. This attitude represents a perfectly reasonable response on the part of students, given the training they receive in typical public schools, and given the prevailing attitude within our society that hard fact is the paramount form of knowledge and is to be pursued above all others.

Students are attracted to design school for many reasons. Some students are looking for a career track, some like to build objects, some like to draw, some have family members or friends who are professional designers, some like looking at building interiors and exteriors, and some just like looking at design oriented magazines.

1. Some of these questions are quantitative, some are qualitative, some are normative, some are descriptive.

Whatever the reasons students have for looking into a design program, they are usually qualitative in nature, a bit intuitive, and even emotional. "I just love doing house plans." "I have always enjoyed making wooden objects." Prospective students offer explanations for their desire to enter a design program in entrance interviews in terms that almost always suggest a deep seated and earnest desire to study, to learn, and to investigate the issues and ideas that make design such an intriguing field.

II. Perceptions of Students and Teachers

During the time between the entrance interview and the first week of class in the fall semester a surprising transformation in the student often seems to occur. It is one that invariably baffles faculty who unwittingly believed that the expression of interest in studying design in an entrance interview would mean that the student would be willing, and perhaps even eager to pursue the problems and tasks set forth by the studio teachers. This same student, eager, enthusiastic, and dedicated to his/her education, and to design in particular, now seems to be unwilling to follow the path set forth be the design faculty. The stubborn, defiant, and intractable student now sitting in the studio could not possibly be the same person, who, just a few months earlier had so enthusiastically proclaimed their commitment to engaging in design education and to the methods of this program.

What causes this apparent transformation? Are the faculty members who interview prospective students simply inept at detecting true interests and abilities in and entrance interview? Are students seeking admission to a school cleverly disguising their real interests and intentions to harass and frustrate the teachers?

Understanding this situation requires recognizing that two clearly different views of design education are operating here, simultaneously.

The design *teacher* sees the student as someone who is about to undertake a complex series of activities that are linked by theoretical frameworks that have both conceptual and practical components. The design teacher understands that the student is beginning the process of *becoming* a designer. Furthermore, each project undertaken by the student also consists of a process as well as a product. The process involves many repeated attempts of many different kinds of skills.

Teachers often use analogies, such as that of playing a musical instrument, or of learning to play a highly technique oriented sport, like tennis or golf, as a way of explaining to students just how the process of learning design occurs.

Teachers expect students to 'study', and as a result, to 'learn' about designing. This learning consists of an understanding of design appropriateness, or what is a good thing to do in a given scenario, and an understanding of design action, or how to design, which involves the ability to develop and use skills for designing. Teachers see the 'study' of design as a process that is highly dependent upon repetition as a heuristic device. The re-iteration of a design element or form through drawing, model making or other descriptive methods, is in itself seen as a necessary part of the learning process. This 'studying' activity is central to the student's development of skills and knowledge that in turn enable designing to successfully take place.

Producing multiple iterations of a drawing, model, or sketch, is the kind of activity in which design process, skills, and attitude are learned. Working in this mode allows changes in the design to occur as discoveries are made, as thoughts coalesce, as new information is assimilated into the direction, or concept of the project, and as skills improve. This is what teachers of design see as the work of students in a design program.

The beginning *student* sees an entirely different picture. The student knows that he/she has interests, desires, and experiences, and he/she believes that these can be used, ideally in complete isolation, without leaving his/her desk, to produce the professor's required world of design. He/she also knows that up to this point in his/her academic career he/she has been successful at meeting requirements established by the schools he/she has attended. I have been told by many design students that they cannot understand why they are not doing well in their design studio courses, when they made all 'A's' in high school. The shift from high school, or even an established career, to entering a college design program is a difficult one. The academic and the social environment of a college design program is quite different from that of a high school or a workplace environment.

III. Transformations in Education

The expectations and demands placed upon college students are more substantial in content and more time consuming than those of typical high schools. Furthermore, the nature of design is often foreign to beginning design students, in spite of their conceptions of design, life experiences, or exposure to design activity in other environments. Making a successful transition to college can only occur if students are willing to embrace a transformation in their perception of what designing and design education are all about. To accomplish this transformation students must do at least one of two things.

Students must either have a real trust in their teachers and in the institution in which they are enrolled, or, they must be able and willing to entertain a very different point of view from their current views, which is similar to the condition in literature that is referred to as 'temporary suspension of disbelief'.

If students allow themselves to trust their teachers and the curriculum in which they are enrolled, then they will gradually be transformed by their environment and will develop into designers. While this may appear to be an easy position to adopt, the challenges presented by the dynamic nature of education as a dialectical process confronts students at every phase of their design curriculum. Being asked to trust the curriculum and the teachers in a design program really means that when a student's expectation of the program or teachers vary from what they are presented with, they will not become infuriated, confrontational, or reclusive. To 'learn' something strongly suggests that once the learner or student has learned or absorbed or acquired some knowledge that he/she will be somewhat different as a result of this acquisition.(2) Such differences may occur in the behavior, in the philosophical orientation, or in the attitude of a student. Exactly which, if any, characteristics of a student will be different is not possible to say in advance, but the learning process, or the process of education, and even the purpose of education is essentially to change ourselves. In order for this to occur, some things must be added, and often some things must be relinquished, either consciously or unconsciously.

If the design school curriculum makes very different demands on the student compared to the student's previous experiences, such as those of school, home, or work environments, the student may make a conscious decision to simply adopt a new point of view and see how it works. This testing out of a process or methodology can be undertaken with a skeptical point of view if so desired. Much like a tennis teacher imploring a pupil to change his backhand grip, the change can be viewed with a 'show me it's going to work' attitude. The catch to maintaining this sort of attitude is that in order for the change to work, the student must make a good effort at employing it before it is possible to see any benefit. To provide a fair evaluation of something new requires that a reasonable amount of time be dedicated to testing or practicing before it is evaluated, and then accepted or rejected. It is quite amazing how often the mere newness of a thing is its most significant drawback.

2. "to gain knowledge or understanding of or skill in, by study, instruction, or experience." (Webster's Ninth New Collegiate Dictionary, (1988). Merriam-Webster Inc. Springfield, Mass.)

A new pair of glasses, a new shirt, a new pair of shoes, a new golf swing, or a new technique for holding a pencil will all feel awkward, inefficient, and just plain wrong at first. More often than not, what makes a well-worn pair of shoes feel comfortable is not so much the kind of shoes they are, or even their fit to the foot, but rather it is that they are well worn, broken in, and familiar to you and your particular foot.

If students are prepared neither to trust the teachers and the curriculum nor to entertain a different point of view for the purposes of seeing how it may work for them, then they are probably enrolled in a program that is simply not right for them. If you are longing for Indian food and you find yourself sitting at Paul's Italian Cuisine, no matter how hard you try to imagine that you are about to be served Indian food, the chances are great that you will be disappointed. Harassing the waiter at the Italian restaurant is pointless if what you want him to bring to your table is Indian food.

Students expect teachers to 'teach' them, and through this teaching, they will 'learn'. To students, 'teaching' means one thing, to teachers, 'teaching' means something different. Students in design school want teachers to do two kinds of things. One, to show them how to do things, like technique oriented skills, such as how to letter, how to draft with a pencil, and how to get the computer to render a surface to look like wood. Two, they want teachers to tell them what it is that they, the teachers want, or what is required to get a good grade for the design project, and for the course.

Teachers view teaching as a continuously changing and developing relationship with the subject matter, with students, and with the work students produce. It is a relationship that involves providing students with relevant and appropriate information and strategies, directing them to resources, demonstrating techniques, and providing intellectual direction for the student's investigations. A good design teacher is not looking for a preconceived set of forms, relationships, and conditions in a student project, and a good teacher is primarily interested in the student's ability to develop and document his/her own investigation of their own ideas with regard to an as yet unspecified set of forms, relationships, and conditions. Of course there may be particular exceptions within the context of any project. There may be forms, relationships, and conditions that are program requirements

Beginning design students are generally unprepared for the kinds of challenges a design curriculum presents. This lack of preparation is not entirely a failing or shortcoming of the student.

Rather, it is largely the result of the existing orientation and increasing emphasis, in our society and in our educational institutions, on identifying 'correct' from 'incorrect' answers to all sorts of questions. Tests such as the IQ, PSAT, SAT, GRE, MCAT, LSAT, ARE, NCIDQ, and on and on, are standardized tests that span a student's life from pre-school to post graduate employment and entry into specialized professional organizations. Students have been asked all of their lives to produce answers to questions. Finite, quantifiable answers that are tabulated and compiled to portray some aspect or capability of an individual student, a class of students, a school of students, and even an entire generation of students. "The X generation cannot read or write." "North Carolina students are nationally next to the lowest in SAT scores." "Jimmy is an academically gifted student. He will become a doctor someday." "Timmy's IQ is 75. He is a problem student."

Clearly, an educated person should have the ability to identify correct from incorrect, and it is not this ability or the need for it that is at issue here. The problem, and what is at issue in design education is twofold, and both elements influence each other.

First, is the problem of positioning of 'correct' and 'incorrect' as either the only possible answers, or as the most desirable answer, to questions that clearly do not have correct or incorrect answers. In describing design proposals as either correct or incorrect, we are attempting to disguise, or at least ignore, the ill behaved character of design problems. Clearly we would do this for reasons of convenience. It becomes a much simpler matter to talk to students about their projects if we can appeal to notions of correct and incorrect as the ultimate determinants of the merits of their work. Without a concept of correct and incorrect, a discussion of designing activities, and the resulting works of design, becomes an undulating field of judgments. Once we enter that field it quickly becomes clear that the function of the teacher, and the real power of the teacher is in his/her ability to provide the student with a meaningful educational experience. This is very different from providing an answer, or from imploring the student to find an answer, or worse yet, the answer.

Second, is the problematic notion that there is a 'correct' answer to all questions. The notion that an undertaking, such as designing human environments, which is fundamentally a wicked, ill behaved, or ill defined undertaking, can be, or should be evaluated in terms that explicitly deny both the existence and the legitimacy of a broad range of responses is contrary to the essential aspects of human experience within the built environment. Only an adherence to a rigid ideology, or dogmatic position can explain how and why one would position design proposals as correct or incorrect.

Ideological positions, such as that maintained by members of the DeStijl group, provide hard boundaries for categorizing the world into correct and incorrect conditions. As long as the ideology is not questioned or rejected, an internal coherence can be maintained. The consequences of maintaining such a position are sometimes like the Emperor's Clothes; a priori quite intriguing, but ex post facto quite revealing. Adherents of ideological positions frequently recant, or simply change, after time and experience erode their fervor or reveal something new.

While such an ideological position may provide direction and meaning for an adherent, the imposed limitations do not encourage broad experimentation or broad based learning.

The notion of correct and incorrect responses to questions, and even the notion of answers (as definitive statements) to design questions an area in which teacher and student interaction becomes difficult. Communication between students and teachers is too often defined as the individual with authority granting permission to the subservient individual. Designing is a complex activity, and students struggle to engage with, and develop some mastery of the principles, terminology, history, and practice involved in successfully designing the human environment. A richer, and more interactive path can be developed in the relationship between teachers and students if teachers work to demonstrate to students the fluid, reflexive, and interactive character of design projects and the human situations that are central to creating successful design projects. This path is one that begins to be developed when teachers and students discuss the characteristics and qualities of design proposals, and the implications of design decisions in terms of 'what if...'. A dialogue based on the investigation of 'what happens if...' reveals the direction a student's project is seeking, it reveals the depth, or lack of depth of the student's knowledge, it reveals the teacher's knowledge and experience, and not his/her power as a despot.

Most of the interesting issues in designing human environments are qualitative, they defy meaningful quantitative analysis, and they change unexpectedly, and in response to unexpected influences. Students need to learn to search, not merely to provide. They need to develop confidence in their ability to have and develop ideas. If, as some educators suggest, knowledge can only be acquired in relation to the level of knowledge one possesses, then it seems clear that a priority in design education must be for students to develop useful mechanisms for acquiring knowledge. The ability to produce responses that students view as correct, in the context of designing, does not propel them forward in their development of skills, or their acquisition of relevant design knowledge.

The important questions to which students seek answers will, over time, define the character and the direction of their lives. The human condition, and the wonderfully rich set of consequences and responses to it, exists in a constant state of enthusiastic irresolution. The qualitative aspects of designing demand interpretation and evaluation but they defy objective, binary categorization such as right or wrong. To propose that the questions that attempt to explore the character of designing and the character of the built environment should be answered as either 'correct' or 'incorrect' conceals and represses the nature of education and the richness, diversity, and value of constantly changing, reflexively transforming, life experiences.